MEASUREMENT OF GEOMETRICAL TOLERANCES USING MACHINE VISION

MOHAMAD NABIL BIN WAHID

2006689730

A thesis submitted in partial fulfilment of the requirement for award of Bachelor of Engineering (Hons) Mechanical

Faculty of Mechanical Engineering

Universiti Teknologi MARA (UITM)

MAY 2010

"I declare that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree"

Signed: .....

Date: 19 MAY 2010

Mohamad Nabil Bin Wahid

UiTM No: 2006689730

ACKNOWLEDGEMENT

First and foremost, Alhamdulillah and thanks to Allah the Almighty for the completion of the final year project thesis entitled Measurement of Geometrical Tolerances Using Machine Vision on the given time.

I would also to express my sincere gratitude and appreciation to Assoc. Prof. Dr. Ir. Muhammad Azmi bin Ayub as my project advisor for his valuable time, guidance, encouragements and advises in making of this thesis.

Not also forgotten to my family, friends, housemate and those who has helped and supported me direct or indirectly throughout the completion of this project.

ABSTRACT

Machine Vision is a one of geometrical measurements that uses a digital imaging technology. It employs image processing software to measure and thus to obtain the measured dimension of the product. With the use of Machine Vision, visual inspections that require high-speed, high-magnification, 24-hour operation, and/or repeatability of measurements are possible. In this project, the purpose is to measure and obtain the measured dimension of a camshaft of an automotive car. All the programming will be created and developed by using WiT Image Processing Software with an assist of C++ code. A trial and error approach will be used until the suitable programme that created is satisfied all the requirement in term of accuracy, consistency and adaptability of it's to analyze and interpret the image to obtain the required dimension parameter. It is vital in this project to have a perfect image acquisition of the camshaft so that the image produces in the computer is clear and sharp enough to define its edges and thus to generated the required dimension using the developed program. To obtain the required image, a good lightning must first be set-up before any image acquisition can be done. All the dimensions obtain will be compared with the contact approach method as which has the best method in determine the geometrical tolerances of the camshaft.

TABLE OF CONTENTS